AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Original) An organometallic complex structure comprising:

a metal ion;

an organic compound capable of binding to the metal ion;

a pillar ligand capable of binding to the metal ion; and

an organic polymer capable of interacting with the metal ion;

wherein the organometallic complex structure has a porous structure.

2. (Original) The organometallic complex structure according to claim 1, wherein the molar ratio of the metal ion, the organic compound, and the pillar ligand, that is, metal ion : organic compound : pillar ligand, is one of 2:2:1 and 1:2:1.

3. (Previously Presented) The organometallic complex structure according to claim 1, wherein the organometallic complex structure is expressed by one of formulae: $\{[M_2Y_2L]_2 \cdot xH_2O\}_n$ and $\{[MY_2L]_2 \cdot xH_2O\}_n$, where M represents the metal ion, Y represents the organic compound, L represents the pillar ligand, and x and n represent an integer.

4. (Previously Presented) The organometallic complex structure according to claim 1, wherein the porous structure is a structure such that pores with a specific size are arrayed regularly.

5. (Previously Prsented) The organometallic complex structure according to claim 1, wherein the porous structure is a structure such that two organometallic layers adjacent to each other of two or more organometallic layers formed by the metal ion and the organic compound are linked by the pillar ligands, wherein the pillar ligands are arranged with the length direction thereof being a substantially same direction and spaced substantially at specific intervals, wherein the pillar ligands are arranged such that the length direction thereof is substantially perpendicular direction with respect to the organometallic layer.

6. (Currently Amended) The organometallic complex structure according to claim 5, wherein in the porous structure, a plurality of pores have a substantially specific size seen from the direction substantially parallel to the arrayed direction of the pillar ligands, wherein the pore is formed by two pillar ligands adjacent to each other, two other pillar ligands adjacent to the two pillar ligands and positioned substantially in parallel thereto, and ~~a~~ regions of **[[**the**]]** two organometallic ~~layer~~ layers adjacent to each other, the regions being surrounded by these four pillar ligands.

7. (Previously Presented) The organometallic complex structure according to claim 1, wherein in the porous structure, the size of the pores is capable of being changed by a stimulus.

8. (Previously Presented) The organometallic complex structure according to claim 4, wherein the organometallic layer comprises a structure in which organometallic layer structural units formed by the metal ion and the organic compound are bridged, wherein in the organometallic layer, each of metal ions in two organometallic layer structural units is

bridged by an organic compound of a first organometallic layer structural unit and an organic compound of a second organometallic layer structural unit, the first and the second organometallic layer structural units each being different from the two organometallic layer structural units, to thereby form a metal ion dimer unit.

9. (Previously Presented) The organometallic complex structure according to claim 8, wherein the orientation of a pillar ligand along the length direction, the pillar ligand being bound to one metal ion in the metal ion dimer unit of the organometallic layer and the orientation of a pillar ligand along the length direction, the pillar ligand being bound to the other metal ion are different from each other.

10. (Previously Presented) The organometallic complex structure according to claim 1, wherein the metal ion is selected from Group 6 element to Group 12 element in the long form of a periodic table.

11. (Previously Presented) The organometallic complex structure according to claim 1, wherein the metal ion is a divalent atom.

12. (Currently Amended) The organometallic complex structure according to claim 1, wherein the metal ion is selected from the group consisting of a copper ion, a rhodium ion, a chromium ion, a molybdenum ion, a palladium ion and a zinc ion.

13. (Previously Presented) The organometallic complex structure according to claim 1, wherein the organic compound is a bridging ligand capable of bridging to the metal ion.

14. (Currently Amended) The organometallic complex structure according to claim 1, wherein the organic compound is selected from the group consisting of a heteroaromatic compound and a derivative thereof.

15. (Previously Presented) The organometallic complex structure according to claim 1, wherein the organic compound is pyrazine-2,3-dicarboxylate.

16. (Currently Amended) The organometallic complex structure according to claim 1, wherein the affinities of the organic compound and the pillar ligand are ~~selected from~~ hydrophilic or ~~and~~ hydrophobic.

17. (Previously Presented) The organometallic complex structure according to claim 1, wherein the affinity of one of the organic compound and the pillar ligand is hydrophilic and the affinity of the other of the organic compound and the pillar ligand is hydrophobic.

18. (Previously Presented) The organometallic complex structure according to claim 1, wherein the pillar ligand comprises a heteroaromatic compound.

19. (Previously Presented) The organometallic complex structure according to claim 1, wherein the pillar ligand comprises heteroatoms at two ends thereof.

20. (Currently Amended) The organometallic complex structure according to claim 1, wherein the pillar ligand is selected from the group consisting of pyrazine, bipyridine,

azopyridine, dipyridylethylene, dipyridylbenzene, dipyridylglycol, dipyridylethane and dipyridylpropane.

21. (Previously Presented) The organometallic complex structure according to claim 1, wherein the pillar ligand is at least one of capable of being expanded and contracted, and capable of being transformed.

22. (Previously Presented) The organometallic complex structure according to claim 1, wherein the pillar ligand is at least one of capable of being expanded and contracted by a stimulus, and capable of being transformed by a stimulus.

23. (Previously Presented) The organometallic complex molecule according to claim 1, wherein the pillar ligand comprises two or more organic molecules, wherein at least two organic molecules of the two or more organic molecules interact with each other through π-π stacking.

24. (Previously Presented) The organometallic complex structure according to claim 1, wherein the organic polymer is selected from an ionic polymer.

25. (Original) The organometallic complex structure according to claim 24, wherein the ionic polymer is selected from a cationic polymer, an anionic polymer and an amphoteric polymer.

26. (Previously Presented) The organometallic complex structure according to claim 24, wherein the ionic polymer is polyvinylsulfonic acid, sodium salt.

27. (Previously Presented) The organometallic complex structure according to claim 1, which is one of a plate-like crystal, a granular crystal, and a wire-like crystal.

28. (Previously Presented) The organometallic complex structure according to claim 1, which is used for at least one of adsorption and desorption of a guest, and arrangement of a guest.

29. (Previously Presented) The organometallic complex structure according to claim 1, which is used for at least one of selective adsorption and desorption of a guest, and selective arrangement of a guest.

30. (Withdrawn) A functional film comprising an organometallic complex structure, wherein the organometallic complex structure comprises:

a metal ion;

an organic compound capable of binding to the metal ion;

a pillar ligand capable of binding to the metal ion; and

an organic polymer capable of interacting with the metal ion,

wherein the organometallic complex structure has a porous structure.

31. (Withdrawn) A functional composite material comprising:

an organometallic complex structure; and

a guest,

wherein the guest is one of adsorbed to and arranged in pores of the organometallic complex structure, and

wherein the organometallic complex structure comprises:

a metal ion;

an organic compound capable of binding to the metal ion;

a pillar ligand capable of binding to the metal ion; and

an organic polymer capable of interacting with the metal ion,

wherein the organometallic complex structure has a porous structure.

32. (Withdrawn) A functional structure comprising:

a substrate; and

an organometallic complex structure,

wherein the organometallic complex structure comprises:

a metal ion;

an organic compound capable of binding to the metal ion;

a pillar ligand capable of binding to the metal ion; and

an organic polymer capable of interacting with the metal ion,

wherein the organometallic complex structure has a porous structure.

33. (Withdrawn) The functional structure according to claim 32, further comprising a guest,

wherein the guest is one of adsorbed to and arranged in pores of the organometallic complex structure.

34. (Withdrawn) A adsorption and desorption sensor comprising:

an organometallic complex structure; and

a detecting unit configured to detect at least one of adsorption of a guest to and desorption of the guest from pores of the organometallic complex structure,

wherein the organometallic complex structure comprises:

a metal ion;

an organic compound capable of binding to the metal ion;

a pillar ligand capable of binding to the metal ion; and

an organic polymer capable of interacting with the metal ion,

wherein the organometallic complex structure has a porous structure.

35. (Original) A method for producing an organometallic complex structure, comprising:

mixing a metal ion, an organic compound capable of binding to the metal ion, a pillar ligand capable of binding to the metal ion, and an organic polymer capable of interacting with the metal ion.

36. (Original) The method for producing an organometallic complex structure according to claim 35, wherein the mixing is carried out at temperatures of 50 °C or lower.

37. (Previously Presented) The method for producing an organometallic complex structure according to claim 35, wherein the amount of organic molecules to be mixed at the mixing satisfies: (mole of the organic molecules/ mole of the metal atom) ≥ 20.

38. (Previously Presented) The method for producing an organometallic complex structure according to claim 35, wherein the mixing is carried out by stirring.

39. (Previously Presented) The method for producing an organometallic complex structure according to claim 35, wherein after the mixing, an obtained crystal or a powder is subjected to a selective orientation treatment, wherein in the selective orientation treatment, pressure is applied to the obtained crystal or the powder from one direction.

40. (Previously Presented) The method for producing an organometallic complex structure according to claim 35, wherein after the mixing, an obtained crystal or a powder is subjected to a selective orientation treatment, wherein in the selective orientation treatment, pressure is applied to the obtained crystal or the powder by pushing the obtained crystal or the powder with fingers from one direction.

41. (Previously Presented) The method for producing an organometallic complex structure according to claim 35, wherein the metal ion is mixed as a compound containing the metal ion.